

Passing Sight Distance

RWD CADD Support
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Introduction

Foreword

This tool provides the designer with an automated method of establishing passing and no-passing zones. This tool will also place the stripe for you after it had determined these zones. Geopak looks at the TIN of the roadway to establish the passing & no-passing sight distance. It basically travels down the road at a certain interval and makes sure it can see an on-coming vehicle at the Minimum Passing Sight Distance specified, without the TIN model blocking the sight. This means horizontal and vertical sight distance limitations are checked.

NOTE: It is required that you have a TIN of your proposed x-sections or at least of your proposed lanes. In extremely hilly terrain it might also be good to include the existing ground. For more information about a TIN see the help file DTM (The section on DTM from Cross Sections. This section is written to create a DTM of the existing ground, but just enter the proposed symbology in the places where you have to specify symbology). To ensure good results from Geopak's Passing Sight Distance, it is extremely important to have a good and valid TIN. Once the TIN is created, plot it in a 3D design file and make sure that there are no gaps in the TIN and make sure the finished proposed pavement is shown correctly by the TIN from the BOP to the EOP.

Instructions

Getting Started

The main dialog on the Passing Sight Distance option is composed of three sections:

Project Information
Parameters
Output

Below is an example of what the dialog looks like:

Passing Sight Distance

Tin File

Job Number

Chain

Beg Station

End Station

Sampling Increment

Parameters

Additional No Passing Distance

Min Passing Zone Length

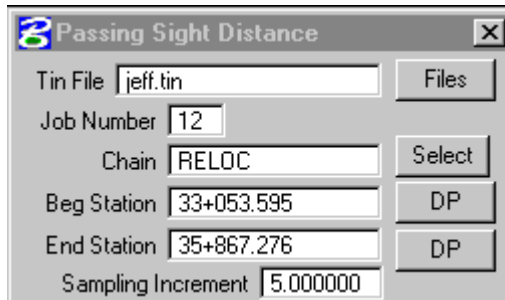
☒ Draw Striping

☒ Write Report

☒ Draw Sight Line

Project Information

The top section of the main dialog is for Project Information.



Passing Sight Distance

Tin File Files

Job Number

Chain Select

Beg Station DP

End Station DP

Sampling Increment

1. You will need to fill in the **TIN file** that was created from the 3D model of the proposed design. (For more information on TIN files, go to the DTM Help file)

2. Fill in the **Job number**

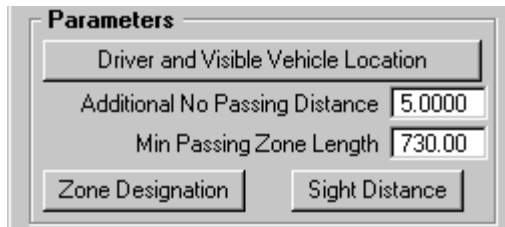
3. Fill in the **CHAIN**. Once the chain has been specified, the beginning and the ending station will be automatically filled in. You can manually fill in the beginning and ending stations if they are to differ from the total station limits of the chain.

NOTE: Remember that your TIN might not extend the limits of your chain. Also, you should add the minimum passing sight distance from the "bop" location where your TIN begins and subtract the minimum passing sight distance from the "eop" location where the TIN ends. These areas can't be determined by Geopak because there is no TIN for the oncoming vehicles to travel on.

4. The Sampling Increment is an increment for Geopak to test and determine whether a location is "passing" or "no-passing". It is specified in master units (feet or meters). **Use a value of +/- 5m (20') for this value.**

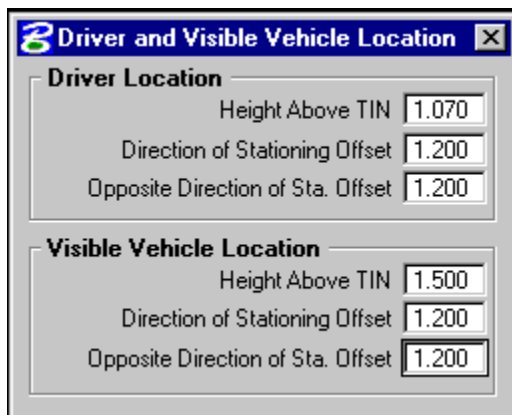
Parameters

The next section on the main dialog is for the parameters. Parameters has 3 dialogs and 2 fields that are to be filled in.



The Parameters dialog box contains a tab labeled "Driver and Visible Vehicle Location". Below the tab are two input fields: "Additional No Passing Distance" with a value of 5.0000 and "Min Passing Zone Length" with a value of 730.00. At the bottom are two buttons: "Zone Designation" and "Sight Distance".

The first dialog is Driver Location and Visible Vehicle Location.



The "Driver and Visible Vehicle Location" dialog box has two sections. The "Driver Location" section contains three input fields: "Height Above TIN" (1.070), "Direction of Stationing Offset" (1.200), and "Opposite Direction of Sta. Offset" (1.200). The "Visible Vehicle Location" section contains three input fields: "Height Above TIN" (1.500), "Direction of Stationing Offset" (1.200), and "Opposite Direction of Sta. Offset" (1.200).

Under **Driver Location**, you will need to fill in the all the fields.

1. Height above TIN - vertical distance from the TIN to the driver's eye. AASHTO recommends 3.5 for English and 1.07 for metric.
2. Direction of Stationing Offset - the horizontal distance from the alignment to the driver's location. Usually for 12 ft lanes the distance would be 4 (english) and for 3.6 m lanes the distance would be 1.2 (metric).
3. Opposite Direction of Sta. Offset - the horizontal distance from the alignment to the driver's location. Usually for 12 ft lanes the distance would be 4 (english) and for 3.6 m lanes the distance would be 1.2 (metric).

Under **Visible Vehicle Location**, you will need to fill in all the fields.

1. Height above TIN - vertical distance from the TIN to the roof of the vehicle. It is recommended 5.0 for English and 1.5 for metric.
2. Direction of Stationing Offset - the horizontal distance from the alignment to the roof of the vehicle. Usually for 12 ft lanes the distance would be 4 (english) and for 3.6 m lanes the distance would be 1.2 (metric).

3. Opposite Direction of Sta. Offset - the horizontal distance from the alignment to the roof of the vehicle. Usually for 12 ft lanes the distance would be 4 (english) and for 3.6 m lanes the distance would be 1.2 (metric).

The **Additional No Passing Distance** is a safety buffer. For example, if the original calculations had a no passing zone from 10+000 to 10+500, and the Additional No Passing Distance was set to 10 m, then the new no passing zone would be from 9+990 to 10+510.

The **Min Passing Zone Length** is used by Geopak to determine if it should connect two no-passing zones based on this distance. If the distance between the two no-passing zones is less than this value, Geopak will combine the two no-passing zones. If the distance between the two no-passing zones is greater than this value, the two zones will not be combined. Set this value at or less than the value you specify for the Minimum Passing Sight Distance if you are unsure what to set here.

Zone Designation

This is used to create exceptions to the rule. It allows you to establish Station Ranges of Passing and No-Passing zones that will override Geopak's calculations. For example, you could set the No-Passing through station ranges of an intersection and even if Geopak calculated this area as a Passing zone, stripe would be placed as No-Passing.

Sight Distance

This is where you specify the MINIMUM PASSING SIGHT DISTANCE. It can be found in the Roadway Design Manual. The department has established 330 m (1100 ft) of sight distance as its threshold for warranting pavement markings for no-passing zones.

Beg Station	End Station	Distance
33+053.595	35+867.276	730

Beginning Station

Ending Station

Min Sight Distance for Passing

Output

From the output section of the main dialog you can do 3 things:

1. Draw Striping
2. Write Report
3. Draw Sight Line

DRAW STRIPING

The following dialog opens for the draw striping:



The 2D DGN is the 2D Microstation design file that you want the striping placed after the calculations are completed. If you tag the Solid or Skip, the D&C Manager will open so that you can choose the stripe that you want to place. You can also tell Geopak the skip length, stripe length, left offset, and the right offset. These offsets are the distance left and right of the baseline which the stripe will be placed.

WRITE REPORT

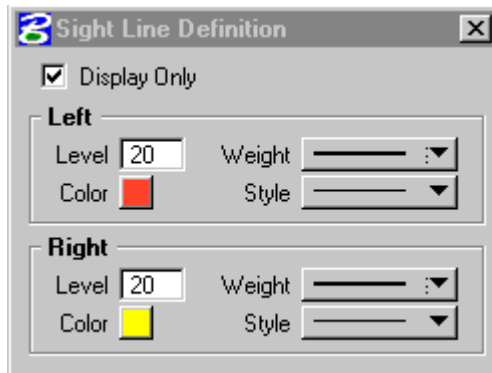
Here you will specify a text file for Geopak to write the results of the stripe calculations. An example of this is shown below:

Solid Left		Skip Center		Solid Right	
-----		-----		-----	
33+205.16 R 1 to	33+259.84 R 1	33+053.60 R 1 to	35+867.28 R 1	34+077.82 R 1 to	34+079.38 R 1
33+548.91 R 1 to	33+564.53 R 1			34+299.69 R 1 to	34+324.69 R 1

DRAW SIGHT LINE

Tag on the DEFINE next to the sight line. The sight line shows each location Geopak looks from and to. The length of all these lines will be the Minimum Passing Sight Distance. They will be placed from the driver location a distance of the Minimum Passing Sight Distance to the oncoming vehicle location in each direction at the sampling increment.

Below is an example of the dialog box:



If the DISPLAY ONLY is toggled, then the lines can be seen, but they are not drawn in the file. They are displayed until you update the view. These sight lines are drawn into the 3D design file that you are currently in.

Tag APPLY at the bottom of the PASSING SIGHT DISTANCE to run the application. Geopak will notify you that it checked the right side, then the left, placing stripe, and then when it is done. No stripe will be placed if there are undetermined areas. Undetermined areas will occur normally because the pavement area of the TIN is incorrect. Remember also that you should back off the BOP and the EOP stations of the chain the Minimum Passing Sight Distance. Even if you have problems with the undetermined areas and no stripe is placed, the report generated will provide station ranges where stripe should be placed in the area it did determine.

Glossary of Terms

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